Storm Water Monitoring in Upper Bull Creek

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The City of Austin Water Quality Monitoring (WQM) Section of the Watershed Protection and Development Review Department has operated a full range flow monitoring station with an automatic sampler since March 2007. The station is located on the upper portion of the main stem of Bull Creek. This report summarizes the activities associated with this station for 2011.

The equipment installed at this monitoring station includes two ISCO 4230 bubbler meters to record water depth, two ISCO 3700 automatic samplers, two cell phone modems for remote communications, a tipping-bucket rain gauge and a solar panels and batteries as a power supply. Depth of water and rainfall are continuously recorded and are downloaded, via cell modems, to a central WQM computer for further processing and storage. When the probability of rainfall is high, WQM staff prepares the samplers to collect water quality samples. The samplers are actuated automatically by the meters at a predetermined depth and subsequent samples are collected based on preconfigured program using either time or cumulative flow. WQM staff may remotely change the program, both actuation depth or sample spacing, based on experience and changing weather condition.

Water quality samples are analyzed at the LCRA laboratory for chemical oxygen demand, total organic carbon, ammonia, total Kjeldahl nitrogen, nitrate plus nitrite, total and dissolved phosphorus, total suspended solids, volatile suspended solids, and total metals (Cd, Cu, Pb, Zn). Discrete samples are mathematically combined to generate an event mean concentration (EMC) for the runoff event.

2011 Summary

As with most of Central Texas, the study site received well below average rainfall this year. This resulted in minimal flow in the creek through most of the year. Flow ceased in l ate February and has not resumed.

Samples have been collected from ten valid events to date. The mean concentrations for the 13 measured parameters plus a computed result for total nitrogen are presented in the following table. No significant trends have been observed.

Parameter	Mean Concentration
Total suspended solids (mg/L)	51.6
Volatile suspended solids (mg/L)	10.6
Chemical oxygen demand (mg/L)	26.7
Total organic carbon (mg/L)	5.67
Ammonia (mg/L)	0.030
Nitrate + nitrite (mg/L)	0.67
Total Kjeldahl nitrogen (mg/L)	0.67
Total nitrogen (mg/L)	1.33
Total phosphorus (mg/L)	0.089
Dissolved phosphorus (mg/L)	0.013
Cadmium (µg/L)	0.049
Copper (µg/L)	1.37
Lead (µg/L)	0.933
Zinc (µg/L)	6.51